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(54) Title: METHOD TO DETERMINE THE SPATIAL DISTRIBUTION OF MAGNETIC PARTICLES AND MAGNETIC PARTICLE ADMINISTERING COMPOSITIONS

(57) Abstract: The invention relates to a method to determine the spatial distribution of magnetic particles in an examination area of an object of examination with the following steps: a) Generating of a magnetic field with first sub-area with lower magnetic field strength and a second sub-area with a higher magnetic field strength, b) Change of the particularly relative spatial position of the two sub-areas or change of the magnetic field strength in the first sub-area so that the magnetization of the particles changes locally, c) Acquisition of signals that depend on the magnetization in the area of examination influenced by this change, and d) Evaluation of signals to obtain information about the change in spatial distribution and/or the movement of the magnetic particles in the area of examination. The invention further relates to a magnetic particle composition having improved imaging properties, to various different administering compositions for administering magnetic particles into an examination area and to methods for the administering of magnetic particles.

# INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B5/06 A61K49/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 4 827 945 A (JOSEPHSON LEE ET AL)<br>9 May 1989 (1989-05-09)<br>column 7, line 49 - column 8, line 13<br>paragraph [06.1]<br>paragraph [07.1]<br>----- | 14-22 |
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| X | US 5 792 445 A (TOURNIER HERVE ET AL)<br>11 August 1998 (1998-08-11)<br>column 2, line 59 - column 4, line 36<br>-----<br>-/-- | 14-19 |

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 7 September 2004 | 12 01. 2005 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Lohmann, S |

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# INTERNATIONAL SEARCH REPORT

International Application No
PC[redacted]B2004/050444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | SHEN L ET AL: "Aqueous magnetic fluids stabilized by surfactant bilayers" JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 194, no. 1-3, April 1999 (1999-04), pages 37-44, XP004166644 ISSN: 0304-8853 cited in the application paragraph [0002] table 1 ----- | 14-18, 20-22 |

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2004/050444

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: 1-13, 24-27, 31-33
because they relate to subject matter not required to be searched by this Authority, namely:

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [X] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-22

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-22

Encapsulation containing magnetic particles or administering composition comprising administering particles containing magnetic particles in a coating material which is easily removed and method using such particles.

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2. claims: 23-28

Magnetic particle composition having a particular magnetization curve, magnetic particle formation kit and method of administering a magnetic particle composition.

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3. claims: 29-33

(Aerosol) administering composition for administering of a magnetic particle composition, wherein the particles have a diameter below 100 micron.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 1-13, 24-27, 31-33

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

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P[redacted]IB2004/050444

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International Application No
P[redacted]IB2004/050444

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